

REMARKS

Claims 12-21 are currently pending in this application. Claims 1-11 have previously been canceled. By this amendment claims 12, 14 and 20 have been amended, and claim 21 has been added. No new matter has been introduced. Favorable reconsideration of this application, as presently amended, and in light of the following discussion, is respectfully requested.

The drawings are objected to under 37 CFR §1.83(a).

New Figures 6a-6f have been added to show fabrication steps and structure of the FED cathode. No new matter has been introduced.

The drawings are objected to as failing to comply with 37 CFR §1.84(p)(4).

Figure 3 has been amended to designate the conductor with reference character 13.

The disclosure is objected to.

In page 6 line 9, Nb has been changed to SiO₂. On page 6 line 15, the second reference to the metal layer has been eliminated. The disclosure now recites that the material for the gate line is niobium (Nb).

Regarding other current amendments to the specification, in the paragraph beginning on page 7 line 3, Applicant notes that "column line 15" has been replaced by "cathode conductors 13" because both have been used to designate the conductor in Fig. 3. In the same paragraph, the sentence "In Fig. 6b, a resistive layer 11 is formed to cover the cathode conductors 13 and maintain a distance from the tape line 18." is supported by Fig. 3 and Fig. 5, and the descriptions

on page 5, lines 17-19 and on page 7, lines 8-10. Additionally, in the same paragraph, the sentence "In Fig. 6c, a dielectric layer 16 and a gate line 5 is formed on the resistive layer 11 and the tape line 18." has support in Fig. 3 and Fig. 5, and descriptions on page 5, lines 26-28, on page 6, lines 6-7, and on page 6, lines 12-13.

Claims 12 and 20 are objected to due to certain informalities.

Claims 12 and 20 have been amended, in accordance with the recommendations of the Examiner, to overcome the informalities cited in the outstanding Action.

Claims 12-20 stand rejected under 35 U.S.C. §112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant respectfully submits that amended claim 12, including the addition of the limitations of "forming and defining a plurality of cathode conductors and a tape line on a substrate at the same time" and "form a metal layer on the gate line and the internal via to contact with the tape line by evaporation", now particularly points out and distinctly claims its subject matter. Applicant notes that support for these limitations can be found on page 5, lines 10-19, on page 6, lines 3-5 and 15-17, and in Fig. 3 and Fig. 5 of the application. No new matter has been added.

Applicant further submits that claims 13, and 15-20, depending either directly or indirectly on amended claim 12, now also particularly point out and distinctly claim their subject matter.

Also, claim 14 has been amended to eliminate the use of the definite article "the" in referring to doped silicon.

Applicant respectfully submits that these amendments have overcome the 35 U.S.C. §112 objections cited above regarding claims 12-20.

Claims 12, 16, 17, 19 and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Applicant's prior art (hereinafter "APA") Figures 1-2e.

Applicant respectfully traverses the rejections for the reasons discussed below.

Independent claim 12 has been amended to more clearly identify a novel and non-obvious feature of the claimed invention. Amended claim 12 recites forming and defining a plurality of cathode conductors and a tape line on a substrate at the same time and etching the gate line and the dielectric layer to form an internal via. In the present application, the term "internal via" means a via which prevents diffusion of outside air from corrupting the vacuum inside and improves the limit of in the sealing process, so that splits around the sealed area of the FED edge are prevented.

APA Figures 1-2e disclose a fabrication method for the FED cathode plate, comprising the steps: depositing an FED cathode structure from bottom to top including a substrate, cathode conductors, a resistive layer, a dielectric layer, and a gate line, etching the dielectric layer and the gate line to form a hole, a cavity of microtip and a contact, forming a microtip within the cavity of microtip, and forming a tape layer on dielectric layer.

Applicant respectfully disagrees with the reading of APA as contained in the outstanding Action. The outstanding Action states that APA Figures 1-2e disclose a FED cathode plate with an internal via, wherein the internal via is formed by etching the cathode structure. However, referring to Figs. 1-2e of APA, along with amended Fig. 3 of the present application as shown in

the attached sheets, an internal via according to the definition of the application is not mentioned in APA. Thus, Applicant submits that Figs. 1-2e of APA do not teach or suggest "a fabrication method for the FED cathode structure" and "etching the cathode structure to form a cathode plate with a hole, a cavity of microtip and an internal via" as indicated in the outstanding Action. Hence, Applicant respectfully submits that a prima facie case of obviousness has not been established regarding Claim 12, and therefore that Claim 12 is allowable.

Independent claim 12 has been amended to add the limitations of "forming and defining a plurality of cathode conductors and a tape line on a substrate at the same time" and "form a metal layer on the gate line and the internal via to contact with the tape line by evaporation". Whereas APA mentions forming a tape line on a dielectric layer, amended claim 12 recites a tape line formed on a substrate, thus preventing diffusion of outside air from corrupting the vacuum inside, and thereby increasing the evenness and durability of the FED frame. Moreover, APA teaches a cathode plate with cathode conductors and a tape line, each formed in different steps.

Moreover, the outstanding Action states that the hole width of APA is an obvious matter of design choice. However, in APA, the cavity of microtip is formed by wet etching through the hole, so the size of cavity of microtip is enlarged by the wider hole. That is, a collapse of gate line would occur since the width of hole is enlarged to about 1.6 μm .

For these reasons, Applicant respectfully submits that independent claim 12 and claims 16, 17, 19 and 20 depending either directly or indirectly therefrom, are patentable over APA Figures 1-2e.

Claims 13, 14 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over APA Figures 1-2e, in view of Kishino et al, U.S. Patent No. 6,133,678 (herein after "Kishino").

In view of the current amendments to independent claim 12 and the above discussion, Applicant respectfully submits that Kishino does not compensate for the deficiencies of APA discussed above. Hence, claim 12 is allowable over APA in view of Kishino, and since claims 13, 14 and 18 depend from claim 12, Applicant submits that these claims are also allowable, for at least the reasons set forth above.

Claim 15 is rejected under 35 U.S.C. §103(a) as being unpatentable over APA Figures 1-2e, in view of Kishino and Baldi, U.S. Patent No. 6,000,980.

In view of the current amendments to independent claim 12 and the above discussion, Applicant respectfully submits that Kishino and Baldi do not compensate for the deficiencies of APA discussed above. Hence, claim 12 is allowable over APA in view of Kishino, and since claim 15 depends from claim 12, Applicant submits that claim 15 is also allowable, for at least the reasons set forth above.

In view of the amendments to the specification and claims and the remarks set forth above distinguishing the claimed invention from the cited prior art references, Applicant submits that the Examiner's objections and rejections have been overcome. It is therefore respectfully requested that the Examiner withdraw the objections and rejections and allow the present claims.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

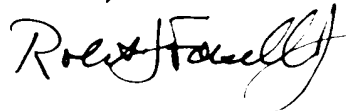
Chih-Chin CHANG

Serial No.: 09/986,175
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In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 50-2394.

Respectfully submitted,

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